

伊瑞霉素键合手性毛细管整体柱的制备与对映体分离

雷雯, 张凌怡*, 万莉, 朱亚仙, 覃飒飒, 张维冰*

华东理工大学, 上海市功能性材料化学重点实验室, 上海 200237

Preparation and evaluation of an eremomycin-bonded chiral monolithic column for capillary electrochromatography

LEI Wen, ZHANG Lingyi*, WAN Li, ZHU Yaxian, QIN Sasa, ZHANG Weibing*

Shanghai Key Laboratory of Functional Materials Chemistry, East China University of Science and Technology, Shanghai 200237, China

摘要

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摘要 以具有22个不同种类手性中心的新型大环抗生素伊瑞霉素为手性选择器,基于环氧基团高反应活性的特征,将伊瑞霉素用一步法键合到甲基丙烯酸酯整体柱表面制备伊瑞霉素键合手性毛细管整体柱。通过对制备条件进行优化,证实该制备方法可在较宽的pH范围(6.0~9.0)内进行,方法简单易行,反应条件温和。应用制备的手性毛细管整体柱在毛细管电色谱模式下,对5种手性氨基酸对映体和手性药物罗格列酮对映体进行拆分,均得到了基线分离,说明伊瑞霉素手性固定相具有较强的手性拆分能力。在优化的色谱条件下,6种对映体的分析时间均小于4 min,分析速度快。通过对有机调节剂、缓冲液pH值和缓冲盐浓度等分离条件进行系统考察,初步探讨了该手性毛细管整体柱对不同溶质的手性识别机理。

关键词: 伊瑞霉素 大环抗生素 手性整体固定相 毛细管电色谱 对映体

Abstract: Based on the high activity of epoxy group of glycidyl methacrylate monolith, eremomycin-bonded chiral stationary phase (CSP) which has 22 different types of chiral centers was prepared by a one-step derivatization process. The preparation conditions were optimized and the preparation can be carried out in a wide pH range (6.0~9.0). The optimized concentration of eremomycin reactant solution was 42 g/L. The optimized method was simple and mild. Prepared CSP was evaluated by separating racemic mixtures of five amino acids and a chiral drug (rosiglitazone) in capillary electrochromatography mode and all of enantiomers were baseline separated. Analysis time of each pair of enantiomers was less than 4 min, so that rapid analysis can be achieved. The effects of organic modifier, buffer pH, and buffer concentration on the separation were investigated. It shows that eremomycin-bonded CSP has good chiral recognition ability. Chiral recognition mechanisms of different solutes on eremomycin-bonded CSP are discussed.

Keywords: eremomycin macrocyclic antibiotics monolithic chiral stationary phase capillary electrochromatography (CEC) enantiomers

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Corresponding Authors: 张维冰,博士,教授,主要从事色谱研究. Tel: (021)64252145, E-mail: weibingzhang@ecust.edu.cn. 张凌怡,博士,副教授,主要从事色谱研究. Tel: (021) 64253977, E-mail: zhanglingyi2317@sina.com. Email: weibingzh_ang@yahoo.com

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